NOTES ON THE NESTING HABITS OF THE YELLOW-THROATED VIREO.

(*Lanivireo flavifrons.*)

BY N. S. GOSS.

On the 9th of May, 1877, I found in the timber near Neosho Falls, Kansas, a nest of the birds (a pendent one, as all the vireos' nests I have found are), attached to branches of a very small horizontal limb of a large hickory tree, about twenty feet from the ground and ten feet below the limbs that formed the tree-top. In the forks of the tree the Cooper hawks were nesting, and I discovered the bird and the nest in watching the hawks — or rather, the man I had hired to climb the tree to the hawk's nest. The little bird at first flew off, but on his near approach, returned and suffered him to bend the limb towards the tree and cover her with his hand on the nest. The twig was quickly broken, and the bird and nest lowered by a line in a small covered basket taken to collect the eggs of the hawks. Such manifestations of courage and love, so rare and exceptional, touched me to the heart, and it was hard to make up my mind to rob and kill the bird and her mate scolding in the tree-top. I can only offer in extenuation that they were the first I had met with in the State, and the desire *strong* to have them in my collection. The nest was made of and fastened to the limb with silk-like threads, and bits of cotton from plants, fastened together by saliva and partially covered or dotted over with lichen, and lined with small stems of weeds and grass; a beautiful nest, in plain sight — nothing near to cover or hide it from view. There were three eggs, also one egg of the cow blackbird (*Molothus ater*); one of the eggs was broken by the bird in her struggle to free herself from grasp while in nest. Color, pure white, with a few scattering small spots toward the large end, of reddish brown. Measurement of each, .79x.58 of an inch. Of four taken from a nest (a full set), .78x.57, .80x.58, .79x.58, 78x.57.

I have since noticed the birds in the woodlands on several occasions, and on the 18th of May, 1883, while strolling along the south bank of the Kansas river near Topeka in the timber skirting the stream, I had the pleasure to find a pair of the birds building a nest in a honey locust, about sixteen feet from the ground and eight feet from the body of the tree; the nest was fastened to forks of a small horizontal branch from a main limb. The frame of the nest appeared to be completed; the birds, busy at work, the female lining the nest with small, hair-like stems, the male covering the outside with soft, lint-like fibrous strippings from plants, closely resembling the limb and its surroundings, and dotting it over with lichen — so happy in the thought that he was not only beautifying the home of his lady bird, but protecting her by his artistic skill from the casual gaze of others. Notwithstanding the fact that she had selected an open and exposed position, he could not refrain from expressing his joy at intervals during the work, in snatches of his sweetest notes. The female, more watchful, sighted me and gave notice of the intrusion. Quick as thought, the birds were away. The male, alighting near the top of an adjoining tree, at once poured forth his song in loudest notes, no doubt thinking by attracting my attention to him I would lose sight of the nest. Knowing it was too late for concealment, and that any attempt would only increase their suspicions and stop or delay the work, I carelessly walked nearer, in order to have a better view, and laid down on my back in an open space. In a short time the female returned, hopped about in the tree, inspected me closely from the lower limbs, flew away and returned several times before bringing material or venturing to the nest; but the moment she did so, his song was hushed and the work actively resumed. As the female stood upon the top of the nest with her head down and inside, I could not see the manner of ar-

ranging the lining, but as she kept walking around upon the rim, I could, in imagination, see her plaiting and weaving in and out the hair-like stems. But it was very easy and curious to see and note the actions of the male, in deftly working the material into the frame, running the longer fibrous, threadlike strippings through, quickly springing upon the top and fastening the same on the inside, then rearranging the outside, stopping a moment to inspect the work, then off in search of more material, occasionally warbling a few notes on the way, but silent at the nest, while I remained so near. At the rate their work was progressing, I think the nest would be completed during the day. I do not know that it is the usual custom for the females to confine their labors to the plain and necessary work, and the males to the decoration of and ornamental parts, but it was so in this case. It may be that the time of laying was near at hand, and that she felt the pressing necessity for the completion of its lining; for in such cases I have seen nests of birds enlarged and completed by the males while the mothers were sitting upon their treasures.

ON THE DISTRIBUTION OF SACCHARINE SUBSTANCES IN THE STEM OF SORGHUM VULGARE.

BY G. H. FAILYER.

During the course of some investigations upon the content and development of saccharine matters in the common sorghum, I made as full examination as opportunity would permit of the distribution of these substances in the plant. Any previous researches in this direction, to which I have had access, have been conducted upon the assumption that the only variation in the composition of the juice from different portions of the stem are to be accounted for by differences in age and ripeness.

Since the lower and riper joints of the southern sugar cane contain a maximum of sucrose and a minimum of dextrose, analogous results were to have been expected with sorghum. This conclusion has been only partially verified by analysis. In all earlier inquiries, the lower half of the stalk has been compared with the upper half.

While it has been found that there is a slight difference in the composition of the juice from these portions, it has been so very unimportant that Prof. Collier remarks: "There is practically no difference in the juice from the upper or the lower half of the fully-matured sorghum stalks."

It occurred to me that there might be other variations than those observed, or than would be anticipated, from differences in maturity. Accordingly, a series of analyses of the juice of the several joints of the sorghum stem were made. This analysis was necessarily confined to the determination of sucrose and dextrose. Eight stalks, similar as to number of joints, ripeness and growth were selected for each analysis, the lowest joint being in all cases rejected. The stalks were cut through each joint, and the internodes numbered from the butt. They were weighed, the juice expressed and analyzed. The sucrose was determined by the Soliel-Scheibler saccharimeter, after defecation with the smallest possible quantity of the basic acetate of lead. The dextrose was determined by Sohxlet's modification of Fehling's method.

The following table, giving the results of these analyses, shows that there is great lack of uniformity in the composition of the juice of this plant, even after it has ripened, and is in a state of comparative inactivity: